

Adapting for tomorrow, now

Description

The evidence of climate change can be seen all around us. Globally, 2022 was the sixth warmest year in a series stretching back to 1850, according to Met Office figures. Sea levels have risen by 20cm since the early 20th century, ocean heat content is at record levels and the [Antarctic sea ice](#) fell to its lowest extent on record for the time of year this June.

2022 was the [UK's hottest year on record](#), with an average temperature of over 10°C recorded for the first time. So far this year, the UK has seen mean temperatures above the 1991-2020 average in January, February and May, with June temperatures the hottest on record in a series dating back to 1884.

Due to the amount of carbon-dioxide that has already been emitted into the atmosphere, we are committed to a further degree of climate change beyond the impacts we are already seeing. And the Met Office's latest [decadal forecast](#) says it is more likely than not that one of the next five years will be at 1.5°C or above, when compared with pre-industrial levels.

The [IPCC AR6 Synthesis Report](#), published earlier this year, underscores the need for rapid emission reductions across the world to reduce greenhouse gas emissions and adapt as far as possible to the human-caused climate change threatening societies and human wellbeing.

At the time of its publication, Dr Chris Jones said: "We know climate change is already happening, and the world has already witnessed extreme events associated with the relatively modest warming we have seen so far. In fact, the world now is the coolest it is going to be, at least for many decades."



“The report underscores the need for urgent action – today’s decisions have implications for future generations. Without immediate and equitable mitigation and adaptation, climate change increasingly threatens societies and human wellbeing. But the report also shows the range of currently available and cost-effective mitigation and adaptation options. Renewed efforts to invest in sustainable development give us the best chance of a climate-resilient future.”

Mitigation and adaptation are the key tools available to us to avoid the worst climate impacts on people, infrastructure and nature. There is a case for both strong mitigation and adaptation, planned and delivered as part of a combined strategy to deal with the challenges of climate change. Employing such strategies now, at pace, will minimise the impact of climate change on our lives now and in the future.

What is adaptation?

[Adaptation](#) refers to the adjustments needed from individuals, communities, governments and countries in response to changes to our planet’s climate. It is different to mitigation which describes efforts to reduce or remove the emissions of greenhouse gases which are causing our planet to warm. Essentially, adaptation could be any kind of action you can take to reduce both the exposure and the vulnerability of humans and the natural environment to our changing climate.

Adaptation can be done ahead of time, which is referred to as anticipatory adaptation, or in a reactive situation, after an event happens, for example, in response to extreme weather. Either way, it is vital that we adapt to minimise the impact of climate change on our lives now and in the future.

This month, through a series of blog posts and content shared on [@MetOffice_Sci](#), we will be looking more closely at adaptation strategies and how Met Office science is working with government, industry and communities to prepare for the climate change that is already happening, as well as prepare for future impacts.

Get Climate Ready

Climate change is overwhelming and so the Met Office [#GetClimateReady](#) campaign aims to help people understand how even by making the smallest changes in our lives, we can all play a part in adapting our lives to protect ourselves from the climate impacts we will see.

We're working with partner organisations to help provide advice on how individuals can tackle the many challenges of climate change. There are a range of [everyday actions](#), which includes practical quick wins for individuals, as well as actions which make the [greatest impact](#). Either way, our combined efforts, make a real difference.

Keep an eye on our [Get ClimateReady webpages](#) for a range of suggestions from our expert partners and follow the [#GetClimateReady](#) campaign across our social media channels to find out more.

Date Created

July 2023

What can the world expect from the developing El Niño?

Description

There is much speculation about how the developing El Niño will affect weather patterns in the UK and around the world.

It is still forming at present, and it won't be fully developed until the end of the year, so we shouldn't anticipate any immediate effects, especially on the UK summer. But what can we expect from this pattern of climate variability in the longer term?

There are three key areas to look for and we will look at each of these in turn:

- The heat coming from the tropical Pacific and its impact on the atmosphere potentially raising the average global temperature; very likely to a new global record this year or next.
- There are anticipated impacts in regions adjacent to the Pacific; notably southeast Asia and eastern Australia, where we could see drier than average conditions which could exacerbate wildfire risk.
- There is a known association between El Niño and a colder than average end to winter in northwest Europe.



Global temperature

The last major El Niño spanned 2015 and 2016, and the second year of the event remains the hottest year on record. Jeff Knight is the Met Office's manager of Climate Variability Modelling. He said: "A typical El Niño temporarily adds about 0.2C to average global temperature.

"This increase is dwarfed by the 1.2C that we have seen from climate change since the Industrial Revolution but added to that human-induced warming a new global temperature record is likely before the end of next year."

Regional impacts

El Niño brings increased risk of drought to South-East Asia, India, North-Eastern Australia and parts of

the Amazon and southern Africa and increased risk of cold conditions to northern Europe in winter. We will be looking carefully at these regions with our colleagues at other national meteorological services as El Niño develops and updated forecasts become available.

Potential impacts on UK winter

Although El Niño has a major influence on altering global weather patterns, its effects on northwest Europe and the UK are often tempered by other more home-grown weather influences.

Jeff Knight added: “The UK is a long way from the tropical Pacific and although El Niño can have an influence on winter in the UK, it is only one of a number of factors that forecasters will have to take into account when assessing the winter outlook.”

You can find out more about El Niño in our explainer video: [El Nino – What is it?](#)

As we have explained above, the typical historical impacts of El Niño can be calculated: however, individual events can differ in detail, such as timing and magnitude. Moreover, El Niño constitutes just one (albeit very important) influence on climate variability.

For this reason, the typical response to El Niño should not be seen as inevitable. Rather, El Niño events should be regarded as shifting the odds in favour of the typical response which may, for example, increase the risk of heavy rainfall and consequent damage in a particular region or season of interest.

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Latest report highlights significantly low sea ice extent

Description

The latest report on Arctic and Antarctic sea ice identifies issues at both poles.



A seabird flies over an expanse of ice bergs and Antarctic sea ice. Picture: Adobe Stock.

The Arctic sea extent is currently the 13th lowest on record for the time of year, while Antarctic sea ice extent remains exceptionally low, and has been at record low levels since late May.

[Dr Ed Blockley](#) leads the Met Office's Polar Climate Group. He said: "During the satellite era, scientists have been able to monitor the annual cycles of sea ice. The current levels of sea ice at both poles are well below average and are a continued cause of concern."

You can read more about the state of Arctic and Antarctic sea ice in our latest [report](#).

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How have daily temperatures shifted in the UK's changing climate?

Description

A new visualisation of Met Office data lays bare the changing climate of the UK using daily temperature data since 1960.

Data shows a 26% increase in above average temperature days (1991-2020) when compared to the climate baseline period of 1961-1990.

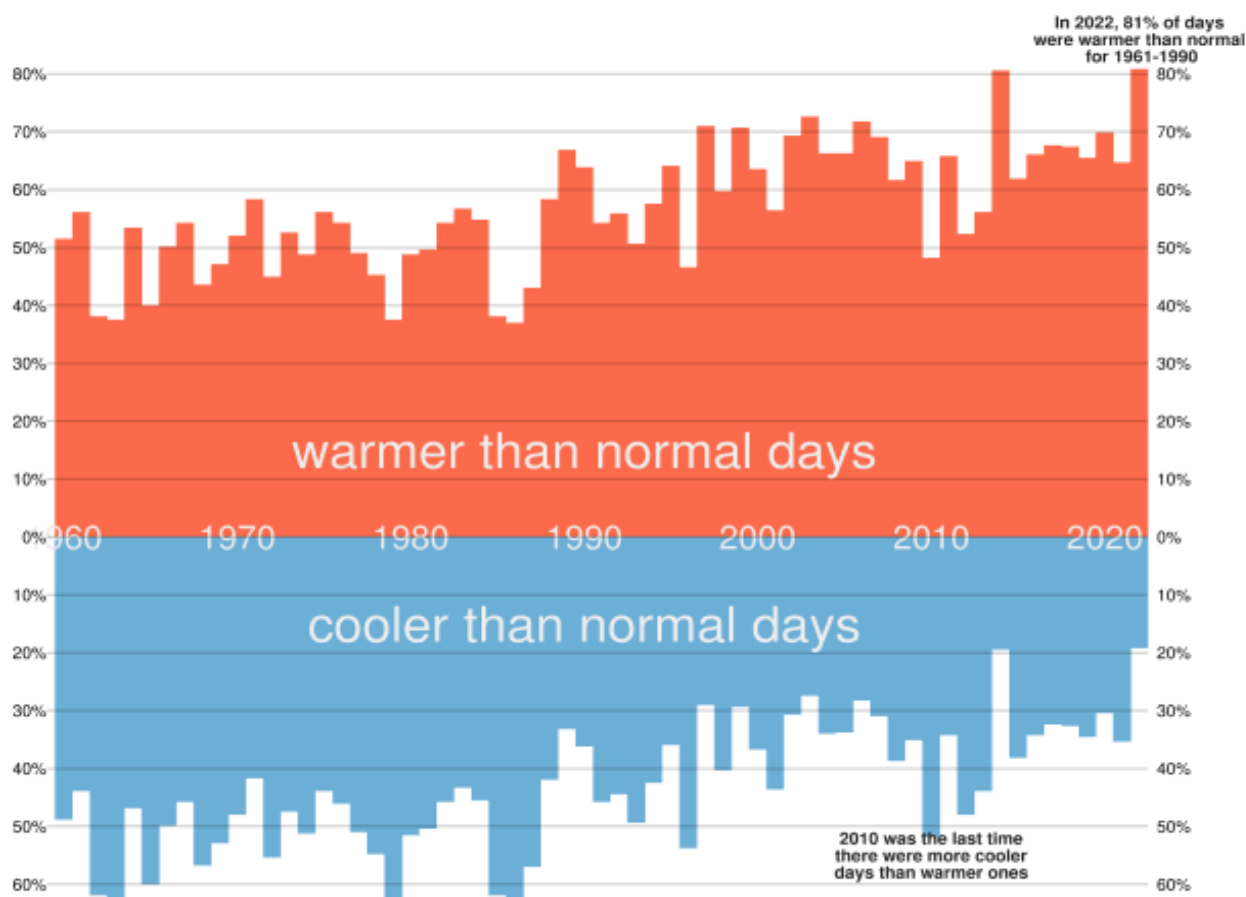
The chart shows how daily average temperatures deviate from the 1961-1990 average in each calendar year and provides a percentage of 'warmer' or 'cooler' days compared to the baseline period.

Data shows an increasing frequency of days with above average temperatures over a 62-year period in a way that moving 30-year meteorological averages don't always capture over the long term.

A full scientific assessment of the UK climate will be released later in July with the annual publication of the State of the UK Climate report from the Met Office.



Percentage of warm and cool days*



*Percentage of warm and cool days in a calendar year when compared with 1961-1990 climate reference period

Data source: **Met Office** Created by **@neilrkaye**

Comparing the latest 30-year averaging period (1991-2020) to the thirty years before that (1960-1991), observations show a 26% increase in temperatures above the average.

The most recent averaging sample of 1991-2020 shows 63% of days warmer than average and just 37% cooler when compared to the 1961-1990 climate reference period. The visualisation uses data from the Met Office's HadUK-Grid data set.

Met Office Associate Director of Climate Science Albert Klein Tank said: "What we've known for a long time is the undeniable warming trend in the UK's climate. What this visualisation shows is how differences between individual years exist but the overall warming trend is robust and backed up by a range of measurements on the UK's climate.

"While we often look at average annual temperatures for the UK and can track an increasingly warm

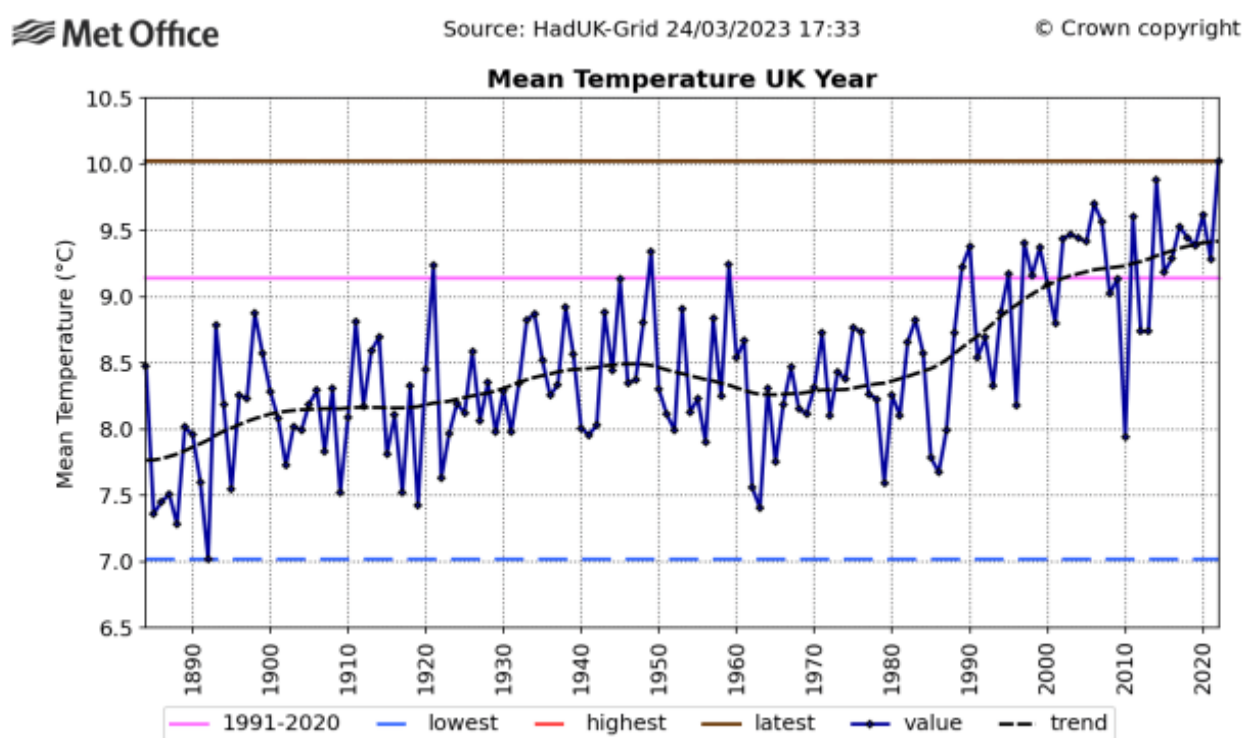
trend for the UK since the 1800s, what this data shows is how daily temperatures have shifted since as recently as the 1960s. While cooler days still occur, what you can see is that days like this are becoming less frequent as human-induced climate change moves the goalposts for UK daily temperatures.”

By using average mean temperature across the UK, you can also determine the ten warmest days since 1960 across the UK have all occurred since 1990, with 19 July 2022 topping the table.

In contrast none of the top ten coldest days by the same measurement have occurred since 2010, with the coldest day on 12 January 1987.

A long-term warming trend

The warming of the UK climate is also observed over a longer period of time using annual mean temperatures from the Met Office Had-UK gridded data set. Using 30-year meteorological averaging periods, the average annual mean temperature for the UK over 1961-1990 was 8.3C. For the latest averaging period (1991-2020), the figure is 9.1C.



The ten warmest years on record for the UK have all occurred since 2002 in this series which dates back to 1884, while [2022 was the warmest year on record for the UK](#) with an average mean temperature of a fraction over 10C.

In contrast, the ten coolest years on record for the UK all occurred before 1963, with six of the ten coldest years taking place in the 1800s in a series which started in 1884.

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We all care about how future changes to the weather might affect us. This might be in our professional lives, where we think about risk from extreme weather to one industry, or this might be because we are all affected by disruption to energy supply, to transport and to food supply.



We don't just care about the weather tomorrow, but we care about the weather next season, and the weather further into the future. We know climate change will bring hotter drier summers, and warmer wetter winters, and more extreme summer hot dry days, longer periods of drought, and more frequent and intense flash flooding.

When we make decisions we think on a range of timescales – what do we need to do this week? What do we need to do this month, or this financial year? Forward thinkers in government and businesses will often think longer term, and for sectors likely to be affected in a big way by the future changes to weather that we will see under climate change, this is an imperative.

With more extreme weather events, we are going to need change the way we do or build things, to adapt to the changing climate. We are going to need to protect our homes and schools from hazards like sea level rise and flash flooding or prevent them from damage from overheating. In the hottest and most vulnerable countries of the world, people will be forced to move away from their homelands, when

nothing can grow there anymore.

Useful climate information to inform decision making

Until recently, different groups of scientists have thought about these impacts at different times in the future using different tools and producing different data products for seasonal and climate timescales. This has meant that information to help inform decision making can be complex for users from different parts of society to understand, making it hard to use this information in their decision making around adaptation.

To help make things more straightforward for decision making, seamless climate products will be produced by a Horizon Europe project involving the Met Office. Scientists working on the Adaptation orientated Seamless Predictions of European Climate project, known as the ASPECT project, will blend the best information from seasonal predictions with decadal climate predictions and beyond. This is a complex scientific task. However, making this information easier for people to use is a key part of climate services, where we develop our state-of-the-art science into something that you can use and incorporate into your decisions.

Embedding adaptation into decision making

Being able to consider climate change in the future consistently at different time horizons. For example, looking at one year, five years and 15 years ahead at the same time (in a seamless way) is really important for climate adaptation. Climate adaptation is a continual process, and one which we need to keep returning to, to ensure that we keep investing adequately to mitigate against the risks we face from climate change. We might want to make some changes now, and some changes in five or 10 years, and so having useful climate information to inform decision making helps people make the right decisions for their business and helps them plan and budget around future climate adaptation.

Climate change is also a ‘threat multiplier’ which means that it is likely to make worse other risks that we face in our lives, and this is why it is important that climate adaptation is embedded into other decision making. This could be at government policy level as recommended by the Climate Change Committee, in regional planning, or into risk assessments for businesses, hospitals and schools. By weaving climate adaptation through all the other decision making in our lives, we will be able to better prepare for the changes and challenges that more extreme weather from climate change will bring.

Become an ASPECT Super User

The Horizon Europe ASPECT project is working closely with organisations in the agriculture, finance and governance sectors, to help them incorporate climate adaptation in their wider decision making.

The ASPECT project recently launched an opportunity for two more organisations operating in societally important sectors in Europe to engage with the ASPECT project and become “Super Users”. Becoming an ASPECT Super User is a unique opportunity to become an integral part of the project over the next three years. The two Super Users will be selected in an open competition, giving them the chance to test and access the novel services developed in ASPECT. Among other benefits,

becoming a Super User will enable you to:

- Make better informed decisions for resilience to climate change and extreme weather;
- Develop your understanding on extreme weather and climate risks, working directly with world-leading experts from the [Barcelona Supercomputing Center](#) and the [Met Office](#);
- Help co-produce useful and usable state-of-the-art climate services that will benefit many other organisations.

You can find out more [on the project website](#), and [start the application process here](#). Applications close on 9 October 2023.

Any organisation can get involved with ASPECT by [signing up](#) to the ASPECT mailing list which will also enable you to join our annual multi-sector User Forum events. You can also get in touch with the ASPECT project via emailing the project at hello.aspect@bsc.es if you have any further questions.

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The Met Office forecast: striving for greater workplace inclusivity and diversity

Description

“Without the contribution of the many women helping to shape our history, the Met Office would not be what it is today.” That is the comment from Tammy Lillie, the Met Office’s Chief People Officer, on



The

foundation of the accreditation stems from a staff survey where employees cited those qualities which for them mean the Met Office is a great place to work. The accreditation is awarded by Great Place to Work UK and ranks 'super-large' organisations (>1,000 employees) against others in the pool. The Met Office has earned the 54th place on the list of eligible organisations.

Tammy added: “We are proud to have seen a near 50% increase in the number of women working at the Met Office over the last 14 years. But we are most proud that the majority of those women feel so strongly about working at the Met Office that they have provided feedback for the Met Office in such a positive way. It helps us on our journey to make the Met Office a welcoming environment and one where everyone can thrive. But we know we can take that journey further.”

Improvements

Some of the ways in which the Met Office has improved the working environment for everyone including women are: flexible working including working from home; work on gender parity; and the development of staff networks to champion women’s issues. Tammy added: “We believe and trust that all of these improvements mean a lot to working women, especially the many who have families or caring responsibilities. But in addition, 98% of our female colleagues told us that they feel the Met Office is a physically-safe place to make a career.”

Dr Freya Garry is an early-career scientist at the Met Office, Head of the Women in Climate network and one of those cohort of people who have joined in the last decade. She said: “It’s wonderful news that the Met Office has been recognised by Great Place to Work UK as one of the ‘UK’s Best Workplaces™ for Women’. We hope this will continue to inspire women and non-binary people to

come and work here. We strive for an ever more inclusive and diverse workplace and have many active staff networks committed to achieving this. By having mixed teams, with different backgrounds, our diversity of thought helps us better achieve our aim to help us stay safe and thrive.”

Creating a space

Abi Mewse, a chartered accountant, is Head of the Women’s network at the Met Office. She comments: “I am delighted that the Met Office has been recognised by Great Place to Work UK. This is testament to our initiatives to improve equity as well as the underpinning work of our staff networks.

The Women’s Network at the Met Office has been instrumental in creating a space for conversation, sharing experiences and advocating for change supported by the Met Office. I very much look forward to us continuing our successes and increasing diversity and equity.”

You can find out more about our [Equality, Diversity and Inclusion](#) progress, and our [Gender Pay](#) reporting.

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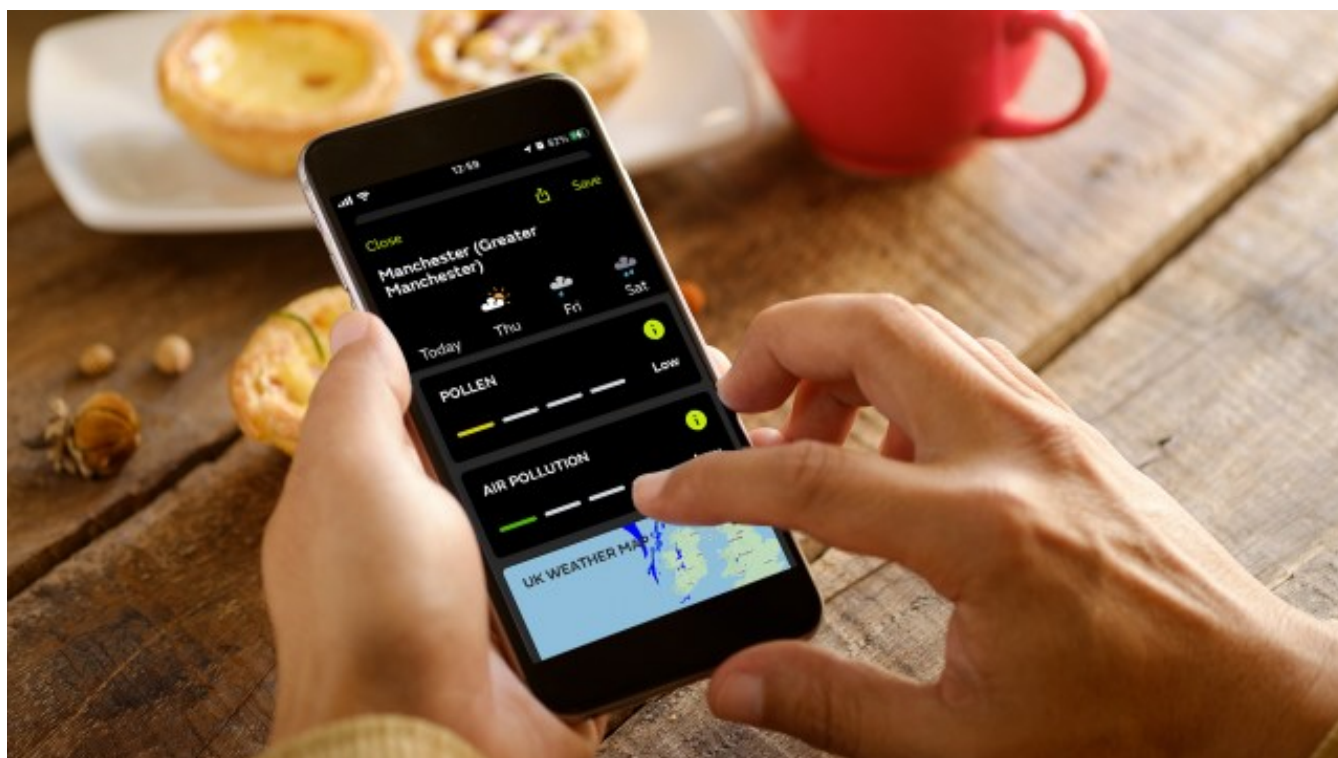
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How does Net Zero impact UK air quality?

Description

The quality of the air we breathe matters. Clean air is a basic requirement of a healthy environment for us all to live and work. But [air pollution is the biggest environmental health risk we face in the UK](#), with at least 28,000 deaths per year attributed to long-term exposure. Additionally, it is associated with impacting lung development in children, heart disease, stroke, cancer and exacerbation of asthma. So, reducing air pollution is vital to save lives and improve health.

The Met Office co-delivers the [Clean Air Programme](#) to proactively tackle indoor and outdoor air quality challenges for a healthier future. The [2023 Clean Air Networks Conference](#) showcased outputs from the programme and discussed the next steps for air quality research and policy. One of the event's key themes was air quality and Net Zero, considering how the strategy impacts efforts to reduce air pollution.



The Met Office app has an air pollution forecast section.

The UK is committed to Net Zero emissions by 2050

The UK's [Net Zero Strategy](#) seeks to reduce greenhouse gas emissions to as close to zero as possible by 2050, with any remaining emissions re-absorbed from the atmosphere. Following the publication of the Climate Change Committee's [Sixth Carbon Budget](#), the UK is also committed to reducing emissions by 78% compared to 1990 levels by 2035. This includes significant changes to household fuel use, with fossil fuels like coal and gas being phased out and replaced by electricity.

[Actions to mitigate climate change can have additional benefits than those directly intended, including for air quality.](#) These co-benefits can act as additional incentives for decision makers to implement such policies, because they help tackle climate change and other issues. According to the [IPCC AR6 Synthesis Report](#): "Deep, rapid and sustained mitigation and accelerated implementation of adaptation actions in this decade would reduce projected losses and damages for humans and ecosystems, and deliver many co-benefits, especially for air quality and health."

Net Zero will deliver many improvements to air quality

[The transition to Net Zero is expected to deliver significant improvements to air quality.](#) In particular, the electrification of transport and home heating will generate substantially fewer emissions of nitrogen oxide and sulphur dioxide, leading to lower concentrations of particulate matter and ozone, which are harmful to human health.

Electric vehicles improve overall air quality, health, and wellbeing, because they emit fewer air pollutants and are quieter than petrol and diesel vehicles. But they still generate fine airborne particles from tyre, brake and road surface wear.

Encouraging people to move from car travel to walking, cycling and public transport provides improvements to air quality and health, including fewer non-exhaust vehicle emissions. Additionally, creating green spaces in urban areas reduces the heat island effect and improves air quality, as well as health and wellbeing.



But some Net Zero measures may harm air quality

Some measures to tackle climate change may adversely affect air quality. Airtight homes reduce occupants' exposure to outdoor pollutants, but the associated lack of ventilation can prevent the diffusion of emissions from indoor sources such as cookers and cleaning products.

Ruth Doherty, of the University of Edinburgh, spoke at the Clean Air Networks Conference on the future of Net Zero policies for air pollution in the UK. Ruth said: "It's mostly good news for outdoor air quality, but there's some uncertainty around indoor air quality due to a lack of measurement data. Switching fuel types is beneficial to air quality, but increased air tightness is a key concern. Failure to provide adequate ventilation will worsen indoor air quality."

So, Net Zero is leading to an overall improvement in air quality. While some measures may increase exposure to air pollutants, many mitigation actions are delivering co-benefits to air quality by removing sources of pollution. They can also encourage active travel choices, enabling people to lead happier and healthier lives.

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Adapting to Climate Change: A Business Imperative

Description

“Have you ever wondered about the role of businesses in the face of escalating climate change”, says Ben Bulger, Director at [Oxygen House](#) Ltd in a guest blog.



The urgency for transformation has never been greater. With record-breaking temperatures and increasingly frequent and intense natural disasters, it's clear that we cannot avoid the effects of climate change. In this context, businesses play a crucial role as agents of change. But the question remains: how can they truly adapt to these challenges? By applying creativity and curiosity in business, we can find some of the answers.

With the sole aim to tackle the challenges of climate change and biodiversity loss, Oxygen House Ltd (Part of the Oxygen House Group) are a pioneering force, offering innovative professional and operational services to accelerate the transition to a low-carbon, climate-resilient future.

Practical Solutions and Small Interventions

Practical solutions like water conservation, energy efficiency, and supply chain analysis are crucial for sustainability, but they represent only one aspect of the necessary transformation. These solutions can provide co-benefits that contribute to profitability, but small interventions that cost little to nothing can

also lead to significant changes. Simple actions such as amending a policy or adding a “green” clause to contracts can be easy wins. These actions can help businesses adapt and thrive in a changing climate without requiring substantial resources.

The Need for a Fundamental Shift

Yet for businesses to truly adapt to the challenges posed by climate change, a fundamental shift in culture and operational thinking is required. A holistic approach is essential. Companies must integrate sustainability into the core of their operations, not merely as a department, consultant, or afterthought.

Stakeholder involvement is key. By acknowledging that we are all part of a much larger ecosystem and involving customers, suppliers, and employees, we can understand their ambitions or limitations. Here, we must balance pace and patience. There are many constraints on large and small businesses where knowledge and funding are challenging, but this should not slow the desire for change.

The two most important adaptations are the systems and policies that govern us and the people that implement them. Progressive initiatives in human resources, like our [Keeling Culture](#) are essential. Our global initiative aims to foster organisational cultural adaptations to combat climate change.

Frameworks and Policy

Internal policies and governance structures must align with sustainability goals. This includes embedding green goals into procurement, contracts, and benefits, setting clear targets, measuring performance, and holding ourselves accountable.

Pioneering projects such as [The Chancery Lane Project](#) support the organisational shift required. They are reimagining legal contracts and systems to support ecological and climate objectives.

Transparency and Communication

At Oxygen House we aim to be transparent in our sustainability efforts and openly communicate both our successes and our failures. Nobody is perfect, and we must build trust among stakeholders to facilitate collective learning and improvement.

In conclusion, true adaptation to the challenges posed by climate change requires a holistic and integrated approach to sustainability. It is not just about implementing practical solutions, but also about shifting our culture, mindset, policies, and operations. In an increasingly resource-constrained world, sustainability is not just a responsibility – it is a necessity for long-term success.

Your Turn

Now, it's your turn to act. What steps will your business take towards sustainability and adaptation to climate change? The Met Office [#GetClimateReady](#) campaign helps people understand how making even the smallest changes plays a part in adapting our lives to protect ourselves from the climate impacts we will see. Let's learn from each other and work together for a sustainable future.

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No need to see red over Met Office colour scale

Description

Southern Europe and northern Africa's heatwave in recent weeks has led to some discussion around how temperatures are displayed on weather forecast maps, with some suggesting 'alarmist' colours are used. However, the reality of the Met Office colour scale is a little more mundane than some online chatter would have you believe.

An impactful heatwave

Make no mistake about it, southern Europe and northern Africa have been experiencing impactful temperatures in recent weeks, well beyond their averages for the time of year.

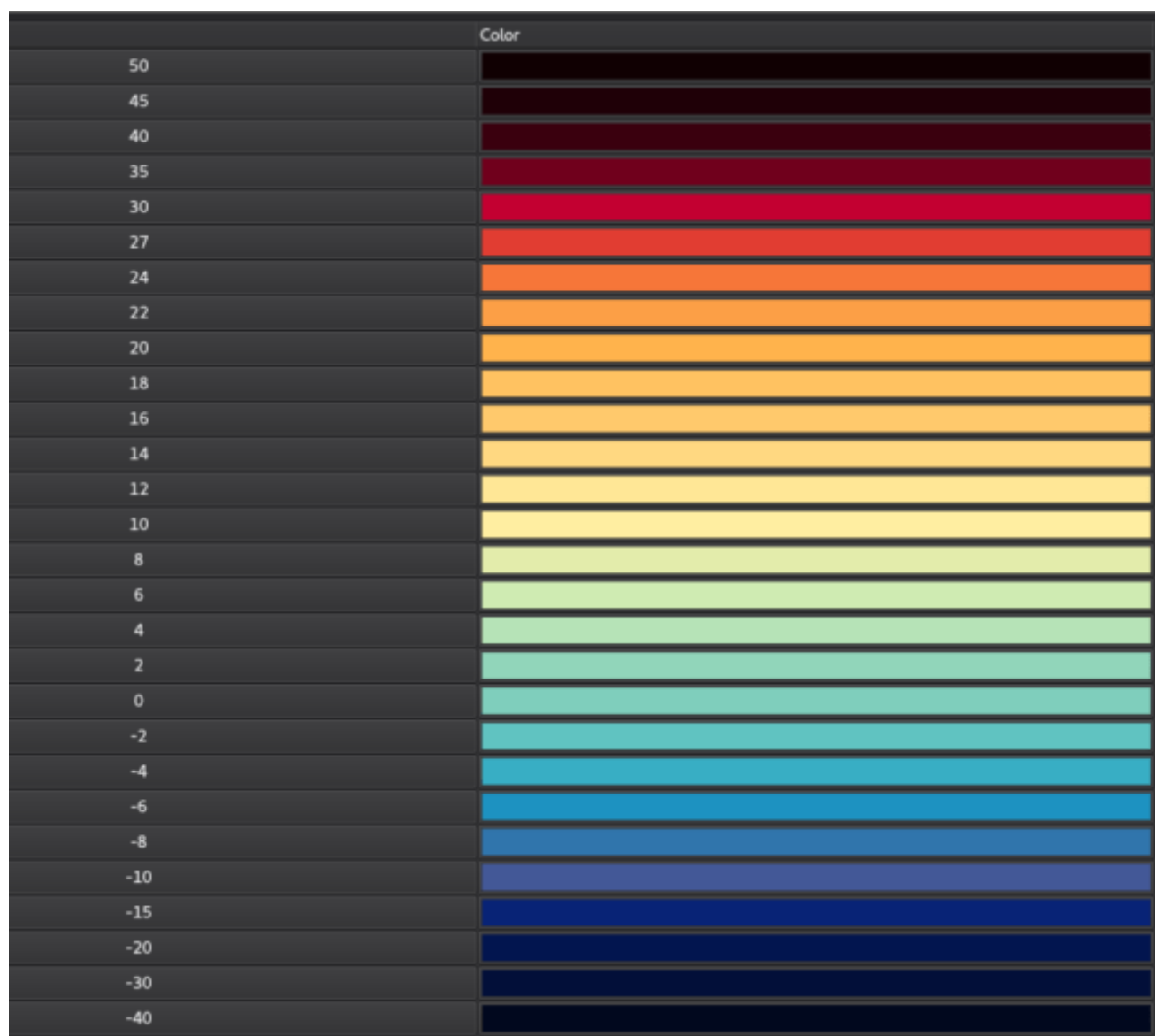
Met Office Meteorologist Paul Hutcheon, who is on duty looking at global weather for the Met Office, said: "Although the extreme heat is now more confined to central and eastern Mediterranean and southeastern Europe, there has certainly been an impactful and long-lasting heatwave in southern Europe in recent weeks, with temperatures often exceeding 40C.

"This has not been 'normal' temperatures for the region. In recent weeks, temperatures have regularly been well in excess of average for the area, reaching into the mid-40s Celsius in some places.

"Temperatures are now relenting slightly, with a weak cold front pushing across the region in the latter part of this week."

How are temperatures displayed in forecasts?

For Met Office weather forecasts, the scale for displaying temperatures is static. This means that the same scale is used no matter the time of year or the region on screen. It provides a consistent view of temperatures throughout the year and makes it easier to make comparisons in conditions across the Earth or between seasons.



The Met Office colour scale for temperature was last tweaked slightly in early 2022 for accessibility reasons to help those who are colour blind interpret the forecast.

Met Office Presenter and Meteorologist Alex Deakin explained: “The temperature scale covers from -55C to +55C and is consistent throughout the year. This ensures that a 22C day will appear as the same colour no matter when or where it occurs.

“For the UK, our usual climate is generally between 5C and 25C so these are the shades of colours that viewers are most likely to see. We use the lightest shade of yellow for the lower temperatures in that scale and get progressively darker with warmer conditions, transitioning from shades of yellow to shades of orange and red.

“When extreme temperatures occur, like we’ve seen in southern Europe, we get towards the darker end of the colour scale, which people don’t tend to see in their forecast very often. So rather than being alarmist, it’s simply a continuation of the colour scale into temperatures that aren’t often displayed, which is reflective of the region seeing temperatures that are rarely experienced.”

Contrary to some misleading online commentary, temperatures quoted in Met Office forecasts are air temperatures. This means it's a reading of the temperatures at a height of 1.25m above the ground inside a Stevenson Screen.

The same static Met Office colour scale is sometimes used to show changes in air masses, that is when the characteristics of the air are going to change on a large scale bringing a different feel to the UK weather. These air mass temperatures are taken a little way above the surface at around 1.5km and so often appear cooler than the temperature forecasts.

Sliding colour scales are also used for other weather types in Met Office forecasts, including for rain, cloud and, at times, wind.

Accessibility in forecast colours

Everyone needs to be able to understand weather information clearly. That's why accessibility is in mind with how temperature colours are displayed. Those who are colour blind can find it tricky to differentiate between different colours, though different shades of the same colour can be easier to understand.

Alex continued: "Rather than lots of different colours showing temperatures, it's much more accessible to those who are colour blind to use fewer colours overall and instead work within shades of light and dark. That's why we use lighter shades of yellow for slight warmth like 8-12C, but darker shades of red the higher up the temperature you go.

"We do exactly the same for cold temperature extremes, with lighter shades of blue for more 'normal' cold temperatures, with it gradually getting darker the colder it goes."

Find out more about [how we measure the weather](#).

Date Created

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Robust and actionable science to help inform adaptation action

Description

We've all heard about Net Zero – but what about climate adaptation? Climate adaptation is action that protects us against the impacts of climate change, both now and in the future. Alongside the need to reduce emissions to limit climate change, we also need to consider our response to the changes we are already seeing and can expect to see in the future. The 40°C heatwave experienced last summer (an event which would have been virtually impossible without climate change) is just one example of an extreme weather event we must prepare for.

On 17th July, the Defra-led [National Adaptation Programme](#) (NAP) was launched. NAP3 sets out a 5-year programme of action to build the UK's resilience to climate change. It is part of the statutory process set out under the Climate Change Act, 2008.

Met Office science has played a vital role in informing NAP3, with the provision of robust and actionable science to help inform adaptation action.



Met Office

"Met Office science informs us that **wildfires, rainfall events, rising sea levels, drought and temperature extremes** are going to have more serious consequences in years to come.

"The National Adaptation Programme establishes a **pathway** to the best resilient future. **We need to follow that journey.**"



Prof. Stephen Belcher
Chief Scientist

What is the NAP3?

The Third National Adaptation Programme (NAP3) includes strengthened and new commitments to respond to the 61 risks and opportunities identified in the UK's Third Climate Change Risk Assessment (CCRA3). Examples of the 61 risks and opportunities include 'risks to people, buildings and communities from flooding' and 'opportunities to UK food imports or exports due to global climate change'. However, the CCRA identified many more risks than opportunities and called for greater

action on climate adaptation.

NAP3 sets out the government's approach to adaptation action. It includes a vision for a well-adapted UK as *"a country that effectively plans for and is fully adapted to the changing climate, with resilience against each of the identified climate risks"*. Defra described NAP3 as a step-change in approach towards action on addressing climate risks.

To respond to the changing climate, NAP3 outlines how the government plans to protect infrastructure, promote a greener economy, and ensure resilient food production. Announcements made in NAP3 include a £15 million programme to support research and skills for adaptation action, alongside existing commitments such as a £5.2 billion investment for flood and coastal schemes in England. Looking internationally for the first time, NAP3 also extended support to vulnerable communities worldwide, with a commitment to tripling adaptation funding through official development assistance to £1.5 billion by 2025.

We're already taking steps to prepare and adapt for the effects of [#ClimateChange](#).

As the latest National Adaptation Programme launches, Environment Minister Trudy Harrison MP visited the [@MetOffice](#) to learn about its role in climate science.

Read more: <https://t.co/qTYKhp1GVr> [pic.twitter.com/O3OMV7M9Rq](https://t.co/O3OMV7M9Rq)

— Defra UK (@DefraGovUK) [July 18, 2023](#)

What role does the Met Office play in supporting NAP3?

To mark the launch of NAP3, Minister Harrison (Defra, Environment and Land Use) visited the Met Office to discuss how Met Office science supports NAP3.



Met Office Chief Executive Penny Endersby with Minister for Natural Environment and Land Use Trudy Harrison from the Department for Environment, Food & Rural Affairs (Defra) to discuss how we can support NAP3 with the best evidence. Image: Crown Copyright.

The [UK Climate Projections \(UKCP\)](#) produced by the Met Office on behalf of government, provide a set of tools and data showing how the UK climate is changing, and may change in the future. The UKCP projections were a key source of information for both the third CCRA and NAP3, providing evidence on climate hazards at 2°C and 4°C of warming.

Met Office scientists also provided bespoke support to numerous government departments to explore some of the 61 risks and opportunities in more detail.

For the built environment sector, Met Office scientists worked with the Ministry of Justice (MOJ) to understand the risks of overheating and flooding in prisons across the country, working with the Environment Agency and MoJ to update its climate change risk assessment to understand how its operations would be impacted by climate change. For the infrastructure sector, Met Office scientists are working with Network Rail on research to understand and predict the risk of soil earthwork failures. The work is contributing to recommendations made in the Slingo reports, following a fatal derailment.

For the natural environment sector, work is ongoing between the Met Office agri-food resilience service and Defra's crop breeding research programme – the Genetic Improvement Networks (GINs). This

work explores the use of genetic technology as an adaptation measure, by developing new varieties of crops that are resilient to the hazards of the future UK climate.

Looking further ahead, NAP3 highlights governments ambition to increase access and usability of climate information. One tool achieving this, launched in June 2023, is the Met Office Climate Data Portal [launched last month](#) built using geospatial technology from Esri UK. The free resources make it easier for businesses or government organisations to combine open climate data with their own data and reveal the future impact of extreme conditions on their operations, including heatwaves, floods or droughts.

Based on this underpinning functionality, NAP3 included an announcement for a one-year pilot for a dedicated Local Authority Climate Service which will provide easy access to localised climate data. Building on previous [Met Office-led work, including 'city packs' developed through UK Research and Innovation](#), the service will help local authorities and Local Resilience Forums (LRFs) plan adaptation by informing them about hazards such as increased heavy rainfall patterns and extreme heat.

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